

10/045,901

Present Claims

1-33. (Canceled)

- 1 34. (New) A digital micro-mirror device projection system for outputting a
2 stereoscopic encoded optical signal comprising
3 3D data formatter for accepting input stereoscopic image signals having an input
4 frame rate, processing said input signals, and providing an output signal characterized by
5 an a self synchronized output frame rate independent of and decoupled from the input
6 frame rate,
7 wherein said self synchronized output frame rate is predetermined or set
8 by a user;
9 a digital micro-mirror device data formatter for receiving an input stereoscopic
10 image and control signal at the output frame rate generated by the 3D data formatter, and
11 for outputting an output stereoscopic image and control signal including
12 color wheel control signals indicative of rotation rate;
13 output digital micro-mirror device data indicative of micro-mirror
14 switching rates;
15 optionally 3D field signal for synchronization with an optional active
16 rotator of a 3D encoder sub-system;
17 wherein said color wheel control signal, output digital micro-mirror device
18 data and optional 3D field signal are synchronized based on the output frame rate
19 generated by the 3D data formatter;
20 said digital micro-mirror device data formatter comprising
21 a dual port memory controller that converts input stereoscopic

22 image and control signal at the output frame rate from a full color image
 23 into an image stream having serial individual color images synchronized
 24 to the rotation of the color wheel based on the output frame rate;
 25 a memory device;
 26 a digital micro-mirror device data converter for formatting data
 27 into a format readable by a digital micro-mirror chip;
 28 a micro-controller for setting the register values of the dual port
 29 memory controller based on the 3D format and sets the optional 3D field
 30 signal;
 31 an illumination source including
 32 a lamp for transmitting light to condensing optics, light from said
 33 condensing optics being transmitted to a rotating color wheel,
 34 the rotating color wheel coupled to digital micro-mirror device
 35 data formatter for receiving color signal data indicative of rotation rate
 36 synchronized based on the output frame rate generated by the 3D data formatter;
 37 a digital micro-mirror chip receiving the output digital micro-mirror device data
 38 synchronized with the output frame rate generated by the 3D data formatter from the
 39 digital micro-mirror device data formatter and reflecting, from micro-mirrors of the
 40 digital micro-mirror chip, light received from said color wheel;
 41 a 3D encoder system having a first 3D encoder sub-system integrated with said
 42 color wheel, said 3D encoder system synchronized with the output frame rate generated
 43 by the 3D data formatter; and
 44 projection optics for projecting light reflected from said digital micro-mirror chip.

10/045,901

1 35. (New) A stereoscopic projection system comprising the digital micro-mirror
2 device projection system as in claim 34 and an optical decoder for allowing a viewer to
3 perceive stereoscopic images.

1 36. (New) The stereoscopic projection system as in claim 35, wherein the optical
2 decoder comprises passive polarizing lenses having one polarization state corresponding
3 to one eye and another polarization state corresponding to another eye.

1 37. (New) The stereoscopic projection system as in claim 35, wherein the optical
2 decoder comprises active shutter glasses.

1 38. (New) The digital micro-mirror device projection system as in claim 1, wherein
2 said self synchronized output frame rate is set or selected to reduce appearance of flicker.

1 39. (New) The digital micro-mirror device projection system as in claim 1, wherein
2 the output signal of the 3D data formatter is Color Sequential stereoscopic data.

1 40. The digital micro-mirror device projection system as in claim 1, wherein the
2 output signal of the 3D data formatter is Frame Sequential stereoscopic data.

1 41. (New) The digital micro-mirror device projection system as in claim 1, wherein
2 the color wheel and the first 3D encoder sub-system comprises circular polarizing color
3 filters.

1 42. (New) The digital micro-mirror device projection system as in claim 41, further
2 comprising
3 a second 3D encoder sub-system including a 1/4 wave plate for switching polarization
4 states positioned between said digital micro-mirror chip and said projection optics or
5 positioned in a light path after said projection optics.

1 43 (New) The digital micro-mirror device projection system as in claim 1, further
2 comprising a polarizer positioned between the lamp and the condensing optics.

1 44. (New) The digital micro-mirror device projection system as in claim 43, wherein
2 said polarizer is a linear polarizer, further comprising
3 a second 3D encoder sub-system including an active rotator for switching polarization
4 states positioned between said digital micro-mirror chip and said projection optics or
5 positioned in a light path after said projection optics, said digital micro-mirror device data
6 formatter further outputting a 3D field signal synchronized with the output frame rate of
7 said 3D data formatter, said active rotator coupled to 3D field signal.

1 45. (New) The digital micro-mirror device projection system as in claim 43, wherein
2 said polarizer is a circular polarizer, further comprising a second 3D encoder sub-system
3 including an active rotator for switching polarization states positioned between said
4 digital micro-mirror chip and said projection optics and a 1/4 wave plate between said
5 digital micro-mirror chip and said active rotator, or a second 3D encoder sub-system
6 including an active rotator for switching polarization states positioned in a light path after
7 said projection optics and a 1/4 wave plate positioned between said projection optics and
8 said active rotator,
9 said digital micro-mirror device data formatter further outputting a 3D field signal
10 synchronized with the output frame rate of said 3D data formatter, said active rotator
11 coupled to 3D field signal.

1 46. (New) A digital micro-mirror device projection system for outputting a
2 stereoscopic encoded optical signal comprising
3 3D data formatter for accepting input stereoscopic image signals having an input

10/045,901

4 frame rate, processing said input signals, and providing an output signal characterized by
5 an a self synchronized output frame rate independent of and decoupled from the input
6 frame rate,
7 wherein said self synchronized output frame rate is predetermined or set
8 by a user;
9 a digital micro-mirror device data formatter for receiving an input stereoscopic
10 image and control signal at the output frame rate generated by the 3D data formatter, and
11 for outputting an output stereoscopic image and control signal including
12 color wheel control signals indicative of rotation rate;
13 output digital micro-mirror device data indicative of micro-mirror
14 switching rates;
15 optionally 3D field signal for synchronization with an optional active
16 rotator of a 3D encoder sub-system;
17 wherein said color wheel control signal, output digital micro-mirror device
18 data and optional 3D field signal are synchronized based on the output frame rate
19 generated by the 3D data formatter;
20 said digital micro-mirror device data formatter comprising
21 a dual port memory controller that converts input stereoscopic
22 image and control signal at the output frame rate from a full color image
23 into an image stream having serial individual color images synchronized
24 to the rotation of the color wheel based on the output frame rate;
25 a memory device;
26 a digital micro-mirror device data converter for formatting data

27 into a format readable by a digital micro-mirror chip;
28 a micro-controller for setting the register values of the dual port
29 memory controller based on the 3D format and sets the optional 3D field
30 signal;
31 an illumination source including;
32 a lamp for transmitting light to condensing optics, light from said
33 condensing optics being transmitted to a rotating color wheel,
34 the rotating color wheel coupled to digital micro-mirror device
35 data formatter for receiving color signal data indicative of rotation rate
36 synchronized based on the output frame rate generated by the 3D data formatter;
37 a digital micro-mirror chip receiving the output digital micro-mirror device data
38 synchronized with the output frame rate generated by the 3D data formatter from the
39 digital micro-mirror device data formatter and reflecting, from micro-mirrors of the
40 digital micro-mirror chip, light received from said color wheel;
41 a 3D encoder system including a polarizing device and an active rotator, the active rotator
42 coupled to said 3D field signals from said digital micro-mirror data formatter, said 3D
43 field signals being synchronized with the output frame rate generated by the 3D data
44 formatter, said 3D encoder system positioned between digital micro-mirror chip and
45 projector optics or positioned in a light path after said projection optics.

1 47. (New) The digital micro-mirror device projection system as in claim 45, wherein
2 said polarizing device of said 3D encoder system comprises a linear polarizer.

10/045,901

- 1 48. (New) The digital micro-mirror device projection system as in claim 45, wherein
- 2 said polarizing device of said 3D encoder system comprises a circular polarizer and a 1/4
- 3 wave plate.